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ABSTRACT

This paper examines the no-growth phenomenon in higher education. A framework is presented for viewing what is occurring in higher education as it seeks to resume a dynamic state of growth. Borrowing from Schumpeter's five categories of innovations by which business firms seek to gain a competitive edge over their rivals, an analytical framework is developed, and the current activities of higher education institutions and agencies vis-a-vis no growth are examined. The authors conclude that higher education is attempting to develop new products, i.e., new courses, programs, degrees; new methods of production, i.e., improving instructional and noninstructional productivity; new markets, i.e., new sources of students; new productive factors, i.e., dollar resources; and is reorganizing and restructuring the enterprise. (Author/MJM)

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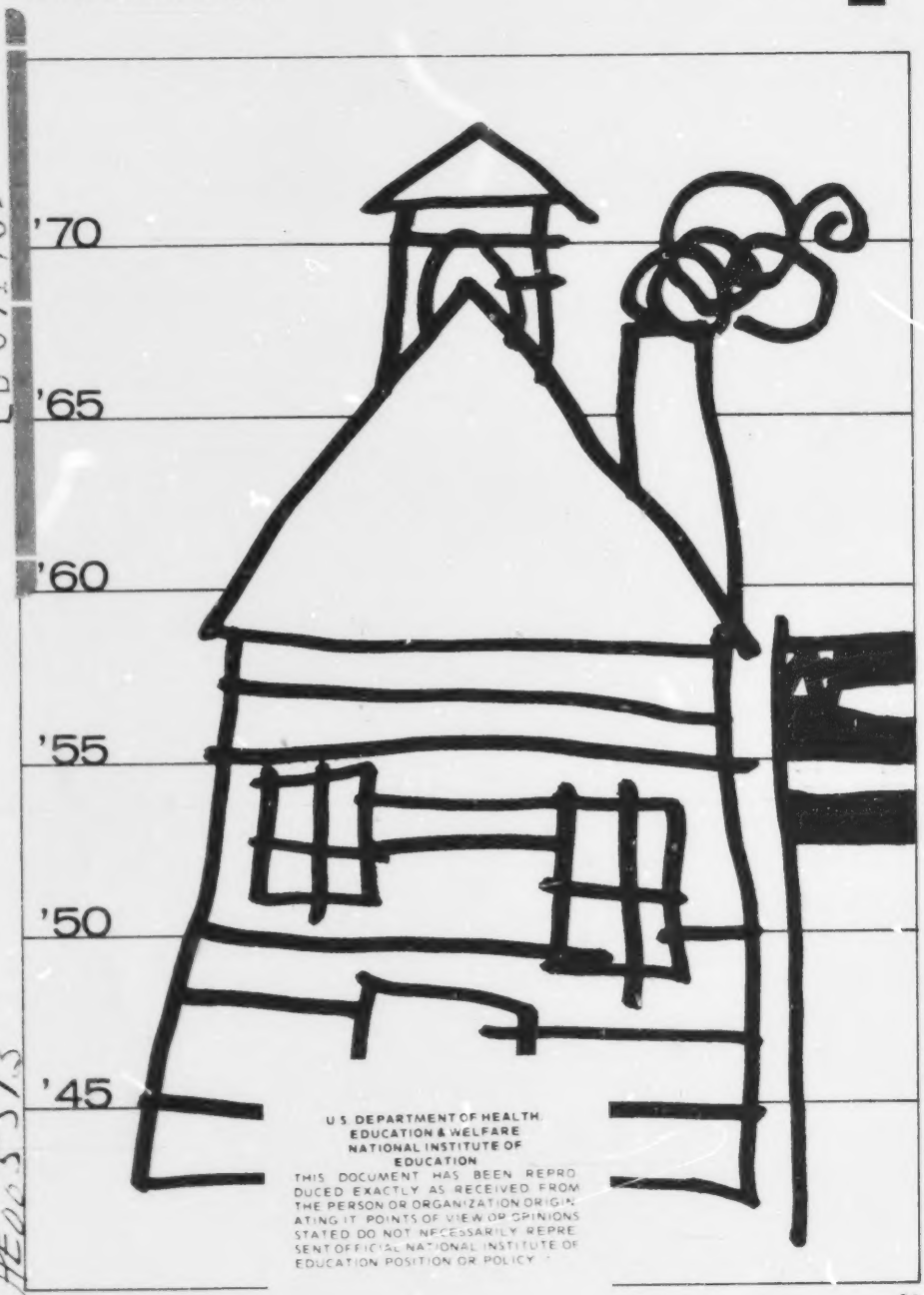

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Foreword

This paper examines the "no-growth" phenomenon in higher education. By any common yardstick, a period of enrollment stabilization is currently being experienced. The rate of enrollment growth is greatly reduced from the boom days of the 1960's, although some enrollment growth continues. When viewed from a broader perspective and utilizing the concept of transverse progression, the overall decline predicted by many has not occurred, and higher education "growth" is likely to continue, even though at a slower rate. A framework is presented for viewing what is occurring in higher education as it seeks to resume a dynamic state of growth. Borrowing from Schumpeter's five categories of innovations by which business firms seek to gain a competitive edge over their rivals, an analytical framework is developed and the current activities of higher education institutions and agencies vis-à-vis "no growth" are examined.

The authors conclude that higher education is attempting to develop new products, i.e., new courses, programs, degrees; new methods of producton, i.e., improving instructional and noninstructional productivity; new markets, i.e., new sources of students; new productive factors, i.e., dollar resources; and is reorganizing and restructuring the enterprise.

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Overview

An era of "no growth" in enrollments is said to be fast approaching American higher education if indeed it is not already here. Although there are important residual effects, the decade of tremendous enrollment growth is now just another entry in the higher education history books. We have witnessed the end of a period of unusual growth in higher education, but a period no less unusual than that which is now unfolding. Just as the greatly expanded enrollment numbers of the late 1950's and the 1960's were accommodated, it appears that higher education must now respond to an equally rapid decline in the rate of enrollment growth. In a real sense only the direction of change is altered; the rate of enrollment growth has declined as rapidly as it once rose. The effects upon higher education institutions may be no less profound than those of that earlier, more sanguine era.

If there is a lesson to be learned from the period of growth, it is that major enrollment changes are felt broadly and deeply. All facets of the postsecondary system are likely to be affected by the present declines just as they were by the rapid increases, and new issues and problems will arise that will occupy much of the time of educational leaders. Institutions must now respond with a vigor at least equal to that which was demonstrated in that earlier era.

This paper discusses the no growth or steady state into which we now appear to be entering and the implications for higher education. Chapter 2 defines the steady state, tells what is commonly meant by the phrase and demonstrates that it is already largely a reality. This chapter shows that whether enrollments or institutional income is the criterion, no growth is an appropriate descriptor. Chapter 3 places the no-growth phenomenon in its broader perspective. Provided here is a means for viewing present enrollment trends in an historical light. From this vantage point, it can be observed readily that there have been other such lulls in higher education enrollments, but that the general pattern over time has been one of constant growth. From this historical view, the genesis of a theoretical concept emerges. Further clues for this concept are taken from economic theory. The theoretical concept that emerges in Chapter 3 is labeled transverse progression: the concept that, *overall,*

growth must continue to occur in essential social systems so long as the society itself continues to progress, as opposed to decay. At the beginning of Chapter 4 there emerges from this concept a framework for analyzing how an essential social system, such as higher education, is able to right itself in a period of decline and once again begin to show growth. This analytic framework is the structure for examining what will occur in higher education as enrollments decline, that is, as innovations are produced in attempts to reverse the downward enrollment trend. The five categories of the framework, or kinds of innovations, derive from Schumpeter's *Theory of Economic Development*. They are (1) the introduction of new products, (2) the introduction of new production methods, (3) the opening of new markets, (4) the employment of new supplies of productive factors, and (5) the reorganization of the enterprise. Utilizing this framework, Chapter 4 presents the heart of the paper —those facets of higher education that are likely to be affected in the steady-state era, and how. This chapter is sub-divided into sections corresponding to the five elements of the frame-work, i.e., the five ways institutions can and will respond to declining enrollments and the five areas of activity and concern within higher education during this period of readjustment. Chapter 5 concludes with a brief summary, three caveats, and some forecasts as to how higher education will fare in its attempts to maintain a constant growth, a "dynamic equilibrium." It is shown that institutions will seek to grow in new as well as traditional ways and that ultimately efforts will be aimed at qualitative as well as quantitative growth.

No Growth

> We don't know how to slow down. All of us have come up through a discipline profoundly influenced by the concept that growth is possible, probably inevitable, and certainly desirable. Consequently none of us, in any of our disciplines, has ever taken the trouble to develop a theory of equilibrium (Dennis Meadows, co-author of *Limits to Growth*).

The big slowdown is evident all around us, whether we look at zero population growth, the mounting sentiment against high-rise apartment construction, or efforts to control our rampant use of energy. Dr. Seuss, the incomparably zany author of children's books, perhaps speaks to the core of the issue when he decries our mindless mania for "biggering and biggering."

Postsecondary education appears to many to be in a skid, out of control with its brakes locked, as it attempts to react to a changing social, political, and economic milieu that few would have anticipated in the extravagant days of the 1960's. Many view the future as a stormy period of no growth in which austerity will be the watchword and stagnation, immovability, and rigidity its by-products. Others perceive the no-growth environment as one in which needed adaptive changes in higher education as a whole will be encouraged, and growth, albeit perhaps in a qualitative sense, will continue.

Before considering the slowdown in postsecondary enrollment growth in broader perspective, let us clearly understand what is meant by the term no growth and how it may be distinguished from other frequently encountered terms such as equilibrium, steady state, stationary state, and dynamic equilibrium.

What Is "No Growth"?

Used here, the term no growth connotes a lack of change of size in a system. The system is neither expanding nor shrinking. The fact that there is no growth, however, does not necessarily imply that there is no activity. Consider, for example, two huge snowballs, one sitting on the cold ground at ten degrees, neither melting nor increasing in size, and another cascading down a hill in thirty-five degree weather gathering snow on the bottom as quickly as it melts away on top. Both are no-growth snowballs as there is no gain or loss in overall size. Yet, their interactions with the environment differ. One relationship is static, the other dynamic. To de-

scribe what may be happening within a no-growth system we turn to terms such as equilibrium, dynamic equilibrium, and steady state.

Perhaps confusion and anxiety accompany the term *equilibrium* because it often is used to connote inactivity. This kind of inactive equilibrium is typical of closed systems, ones that are isolated from their environments. The thermal equilibrium achieved when hot and cold gases are mixed in a chamber or the motionless balancing of two children on a seesaw illustrate equilibrium is a closed system.

On the other hand, the term *equilibrium* can refer to a state of activity—the so-called *steady state*, or state of *dynamic equilibrium* (Andes 1970, p. 5). This kind of equilibrium is seen in open systems, ones that constantly interact with their environments. These systems are alive and to survive must be dynamic in their reactions to environmental change. It is precisely this dynamism that is now being seen and felt in postsecondary education despite the pessimism that typically accompanies the generic descriptor no growth.

Thus, higher education may well cease to grow temporarily in size, yet may maintain its vitality and perhaps even improve its ability to react in an adaptive fashion to changes in its surroundings. Donella Meadows et al. (1972), referring to the potential consequences that can accrue to slowing down, emphasize that even when the quantitative dimensions of population or capital (including service, industrial, and agricultural resources) are in a period of no growth, other pursuits—education, art, etc.—may flourish (p. 175). Within this paper, *steady state* and *dynamic equilibrium* are interchangeable terms used to describe activity in a no-growth educational setting.

Measuring Growth

Before the physician can know *what* is wrong with the patient, he must know that something *is* wrong. Hence, patient complaints typically lead to the measurement of gross indicators of health, such as body temperature and pulse rate. Similar signals within postsecondary education have and are being flashed in the form of enrollment slowdowns and dollar shortages.

Enrollments appear to be the most valid indicator of the growth climate in higher education; certainly, they are the most commonly used. Income, on the other hand, tends to follow enrollments in much the same manner that football gate receipts follow attendance figures. State appropriations are based largely upon the number of full-time equivalent (FTE) students, and even the federal government is moving toward placing more of the institution's future in-

come in the hands of prospective student enrollees. In those cases where state appropriations do not flow directly from FTE's, those institutions experiencing rising enrollments may be demonstrating a responsiveness to student needs that legislators may wish to reinforce in monetary ways.

In sum, both enrollments and income may be used to measure the growth of an institution, but enrollment figures appear to give a clearer picture of the growth environment.

The Enrollment Picture Today

Historically, enrollments in higher education have boasted a growth record that largely has been unrivaled in our society as a whole (Carnegie Commission 1971, p. 1). In the 1960's alone, enrollments doubled, thus outpacing the unprecedented growth in the economy and the rise in the standard of living.

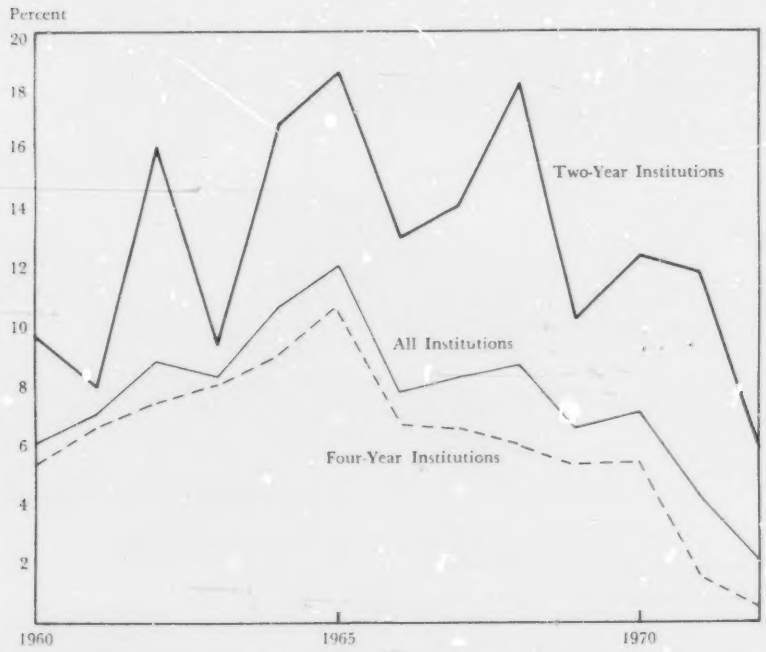
Around 1965, however, and imperceptively at first, the picture began to cloud. Confidence in a college education as a one-way ticket to the good life was jarred as degree recipients began to roll off the academic assembly lines faster than the job market could accommodate them, at least in the traditional fashion. The good jobs commonly found awaiting the college graduate more often were not there. Inflation and a broad realignment of social priorities meant that state and federal guardians of public funds could no longer write higher education the blank checks it had become accustomed to receiving each fiscal year. Further, political activism on the part of both students and faculty continued to stun and even irritate an already less supportive society.

By 1972, enrollment growth rates had fallen to 2.0 percent per year from the 12.0 percent rate of 1965 ("HEW News," 15 April 1973: see Figure 1). Based on early returns of a fall 1973 survey, Garland G. Parker reported that a 2 to 3 percent increase over 1972 seemed certain, thus establishing at least a 2-year trend (*Chronicle*, 5 November 1973, p. 2). Both in 1972 and as estimated for 1973, most of the increases in enrollments could be attributed to the community colleges. Yet even in that hearty sector, the 1972 rate increase was only 5.4 percent, compared with the 11.9 percent growth rate of a year earlier ("HEW News," 15 April 1973, p. 2). Although it was still possible to speak in terms of percentage increases in enrollments, there certainly was less growth than most of the educational community had anticipated. To the institutions

that shored up for a continuation of the enrollment seige, less growth easily becomes no growth or decline in relative, fiscal terms.

The Census Bureau has examined the slackened growth rate in terms of age and sex, and has reported that in 1972, although the general enrollment picture showed slight growth, the percentage of young people between the ages of 18 and 21 going to college was approximately 4 percent below the 1969 level. As the population of these traditional college-age persons has increased, more and more of them, especially the men, have found things to do *other than* going to college. Although female enrollments as a percent of the college-age population have remained essentially steady (*Chronicle*, 5 March 1973, p. 1), approximately 37.6 percent of the nation's 18 to 19 year old men were enrolled in colleges and universities in the fall of 1972, compared with 44 percent in the fall of 1969. Among 20 to 21 year old men, the percentage enrollment dropped from

Figure 1. Rate of Increase in College Enrollments Since 1960



Source: Annual survey of fall enrollment in higher education.

44.7 in 1969 to 36 percent in the fall of 1972. This was the lowest level of college-age male attendance since 1964.

Declining attendance in the private sector has caused great concern, both on the part of private institutions as they fight to survive and among higher education leaders who fear the possible loss in overall diversity. In 1960, approximately 59 percent of college students were enrolled in public institutions. By 1970 the percentage had grown to 73.2 (National Center for Educational Statistics 1972, p. 74, Table 87). Current estimates of student enrollment in the public sector place the figure at 77.2 percent (NCES 1974). When one considers that increases in public attendance are continuing even during times of enrollment stabilization and declining rates of growth, it becomes apparent that enrollments in many private institutions are declining.

In addition to the better-known curtailments of enrollments in the private sector, where higher tuitions largely have resulted in no growth at all (Shell, June 1973, p. 6), slowdowns have affected state universities and land-grant institutions. In the fall of 1972, enrollments in these institutions were up 2.4 percent over the fall of 1971, compared with a 2.0 percent increase nationwide (National Association of State Universities and Land-Grant Colleges, March 1973). The NASULGC figure was substantially lower than the 5.7 percent increase of the year before. Based upon the slower rate of applications, the NASULGC expected enrollment growth to slow further to 1.27 percent during 1973 (NASULGC, May 1973, p. 1).

To gain some insight into the enrollment dropoff at state universities and land-grant institutions, the NASULGC (26 March 1973, p. 1) administered a survey to freshmen at selected institutions. The preliminary findings attributed the slowdown to the growing popularity of 2-year colleges, and to a general waning of student interest in higher education. These reports are significant in that public institutions in general have been able to command more stable enrollments than private colleges, at least partially because of their lower costs of attendance. Evidence of declining rates of enrollment growth in public universities may portend actual declines elsewhere, and the pervasiveness of enrollment stabilization in higher education generally.

Attendance in graduate schools further supports the slowed growth noted in state universities and land-grant institutions and in higher education overall. In the fall of 1972, graduate enrollments were only 1.9 percent higher than the previous year (Altman 1973), with

first-year graduate enrollments up a mere six-hundredth of 1 percent compared with the 5 to 10 percent increases of previous years (Cartter 1973, p. 3).

A final perspective on the enrollment slowdown is provided by examining enrollment per degree course or degree credit rather than simply by viewing raw numbers of students. An Office of Education tally of fall 1972 enrollments reported by Allan Cartter (1973, p. 3) notes a decline of 1.4 percent in the number of first-time enrollees in degree courses—in other words, fewer full-time regular students. Although raw enrollment figures may continue to grow at slow rates, a decline in enrollments per degree credit means that on the whole students will partake of "less college" than formerly. In 1971, the decline in rate of growth of first-time freshmen enrollments became an absolute decline in several categories of private *and* public institutions. Colleges all-in-all may suffer financially even if the on-going increase in raw numbers of students continues.

In a few words, we may characterize higher education as having undergone a period of rather marked decline in rate of enrollment, with the 2-year institutions and technical schools faring best, and the small, private, sectarian institutions faring worst. However, even those institutional types with the soundest enrollment postures are faced with the necessity to economize and to recruit vigorously to maintain a satisfactory margin in the face of severe inflationary pressures.

Enrollments Tomorrow

What does the future hold for enrollments in higher education? Before offering an answer to this question, it would be worthwhile to examine the risky business of making predictions.

Most enrollment predictions, according to Folger (March 1973, p. 2), turn out to be simple ratios of a fixed enrollment rate to the changing size of the college-age population. Enrollment forecasts in this sense depend exclusively upon increases or decreases in the number of eligible students within a certain age cohort, usually taken as the 18 to 21 year old group. Other factors certainly ought to be considered; but as Folger points out, a lack of adequate data on the number of college dropouts who plan to return to college, on the noncollegiate sector of postsecondary education, and on attrition rates across the nation by class level muddles the forecasting of enrollments (p. 3). Folger also notes the additional confusion that arises from the myriad definitions of what constitutes a student.

Not only are our current data bases inadequate for precise predictions, but also uncertainties about the future would be a hindrance even if we really knew how students were acting now. The present volatile birth rate is one such uncertainty. At present the birth rate is about 2.11 births per family, with its direction of change and its implications for future enrollments unknown. Another uncertainty is the degree to which educational structure will loosen to permit more "stopping in" and "stopping out." Yet another is the extent to which new lifestyles will divert students from college altogether (Carnegie Commission 1971, p. 3). One wonders whether the cultural revolution is already exerting significant influence upon traditional college-age males who are attending college in decreasing proportions. Furthermore, what are the effects of the state of the economy, of the "new technologies" in higher education, of the elimination of the draft, and of new modes of financing higher education?

To illustrate the precariousness of even short-range projections, one may look to an analysis of enrollment forecasts for the fall 1972 term at The Pennsylvania State University. It was anticipated that 85.7 percent of the freshmen who began there in the fall of 1971 would register in the fall of 1972. Instead, only 80.6 actually did so, representing an unanticipated loss of 430 students. All other classes enrolled at Penn State in the fall of 1972 showed similar decreases in registrants over and above anticipated losses. Interestingly enough, the number of students who dropped for academic reasons did not increase, nor did greater numbers graduate than expected. Until more detailed studies are conducted, the losses are being listed as increases in the number of "no shows" and "official withdrawals" (intra-university memorandum of 8 January 1973). Not only is the art of long-range projecting in its infancy, but even year-by-year enrollment predicting is imprecise at best.

With some of the indirect shortcomings in enrollment predicting in mind, let us proceed to look at the enrollments of tomorrow. In 1971, the Carnegie Commission began projecting a short-run enrollment trend based on a series 'D' census data revision. The Commission characterized the projection as "go-stop-go." Enrollments were to continue to go up by about one-half in 1980, then level off in the 1980's—the "stop" phase. Another "go" stage, characterized by enrollment increases of about one-third, was to be the trend for the remainder of the century. A later publication by the Carnegie Commission (1972) essentially echoed this earlier enrollment forecast.

In 1973, the Commission came forth with a new revision based on U. S. Office of Education data, Census Bureau projections, and actual decreases in college and university enrollments in 1971 and 1972 (Carnegie Commission 1973b, p. 95). The earlier projections for the 1980's were recomputed in the downward direction by 1.5 million students to a total expected of 11.4 million, while the projection for the decade of the 1980's was down one million and for the year 2000 it was down 3.4 million to 13.2 million students. The trend was still "go-stop-go," but the "go's" were to be flashing yellows and the "stop's" were to be deep reds.

Somewhat in contrast to the Carnegie projections were those of Allan Cartter (1972), known for his record of "most accurate" predictions. Cartter, who based his estimates on data for children already born, noted that the size of the college-age cohort would rise another 10 percent by 1980 (p. 140), then enter a period of decline more rapid than that predicted by the Carnegie Commission. While Cartter predicted that college enrollments would follow the population trends for the typical age cohort of traditional students, the Carnegie Commission predicted an upsurge in the enrollments of nontraditional students, keeping the decline of the 1980's to slightly less than 1 million students.

In a later address, Cartter (1973) made use of the latest Census Bureau series 'F' population projections to revise downward his already bleak predictions. He anticipated about an 8 percent enrollment rise to 1980, then a marked decrease to 1990 (p. 4). His 8 percent increase during the remainder of the 1970's was approximately equal to the estimates gained from projecting the raw population data (based on children already born) to 1980—i.e., an increase of 1.33 million over the present 15.5 million in the 18 to 21 year old age group. This appears to indicate that Cartter either felt that little adjustment was necessary for decreases in the percentage of 18 to 21 year olds who will go on to college, or that this reduction will be offset by increases in the percentage of other age cohorts who attend.

Series 'F' census data call attention to the shift in the population's age composition that accompanies a declining birth rate. The projected increase in the median age—from 28.1 to 35.8 by the year 2000 (Bureau of the Census, December 1972, p. 3)—if accompanied by a growing interest in alternative forms of postsecondary education, might offset the marked decline of the 1980's predicted by Cartter. As the matter stands now, however, it will require a

diligent effort in planning and perseverance to stave off the kinds of enrollment drops Cartter predicted for the 1980's.

In sum, data currently available plus enrollment projections for the next two decades indicate that higher education will progress from modest enrollment increases in the 1970's to either slight or major decline in the 1980's.

What Is Happening to Institutional Income?

Enrollments, which are growing more slowly now than in the prosperous 1960's, have been cited as the key indicator of whether we are now in or will soon enter a no-growth era. Institutional income patterns verify the slowed or no-growth trend in higher education.

The private sector has received the most severe blows. In a study of income and expenditures in 48 private institutions, Jenny and Wynn (1972) illustrated the clear trend toward diverging rates of income and expenditure. Between 1960 and 1968, the annual income growth rate was 9.7 percent; however, a drop in the rate of income growth during 1969 and 1970 lowered the rate to 9.5 percent *per annum* for the decade (p. 9, Table C). The trend toward decreasing rates of income growth in the latter part of the 1960's was unmistakable. At the same time, the rate of growth of total expenditures increased in the last 2 years of the 1960's from 9.8 percent, previously, to 9.9 percent (p. 9, Table C). These data point clearly to the widening gap between income and expenditure growth curves.

In addition to this general cost-income spread, several other economic factors influenced the decline in the institutional income of the private sector (Reinert 1972b). Among these were the decreases in corporate giving, diminished tax incentives for private donations, and depressed stock prices, which affected both foundation giving and the equity of securities held by institutions (p. 18). Perhaps the psychological effects of these "paper losses" were most severe of all.

Income trends for public insttutions are summarized annually by M. M. Chambers (1971, 1972, and 1973). In 1971-72, state appropriations to higher education for operating expenses reached the lowest year-to-year increase (7 to 10 percent) since 1962. State appropriations to 98 state universities for 1972-73 decreased in 11 instances, while 46 institutions received increases of less than 10 percent, the amount calculated by the Office of Research and In-

formation (Normal, Illinois) required to maintain services at constant levels (1972, Preface). Figures recently released show that state spending over the last 2-year period, 1971-1973, was about the same as for the previous 2-year period. States showing rapid population growth (e.g., Arizona and Nevada) and others with developing systems of higher education (e.g., South Carolina and Arkansas) were illustrative of states showing gains in the neighborhood of 20 to 30 percent per year (Chambers 1973, p. 6). Since the average was only 7 to 10 percent, institutions in most other states obviously fared far less well.

Inflationary pressures are still high and have resulted in backsliding by large numbers of institutions. It costs more than it did a year ago to merely accomplish the same thing, as expenses continue to grow at a faster rate than income. So-called "hold-the-line" state appropriations are cutbacks as long as costs are not similarly held constant. In higher education as well as in most sectors of the economy, the problem is running fast enough to stand still. More fortunate institutions are accomplishing this, while less fortunate ones are falling off the inflationary treadmill.

Whether we choose to use institutional income corrected for inflation, or institutional enrollments, the slowdown in growth appears strikingly to be upon us. Higher education institutions today are engaged in hard-fought battles in many sectors just to manage cost-of-living increases.

Having summarized the projections of others, we would like to turn to an alternative view. As will next be shown, we think that higher education is more likely to react to the current slowdown in a dynamic manner such that ultimately it will survive and continue to grow, if not in size, then in the quality of services it provides and in the quality of life it nurtures.

Lest we become mired in the nearsightedness brought on by a preoccupation with what may be only a temporary condition, let us turn our attention to a broader perspective from which the events of the 1970's and 1980's may be viewed.

A Broader View

Enrollment in Perspective

Relativity may be an even more relevant term in the social sciences than it is in the physical sciences. The tremendous higher education enrollment growth of the 1960's makes 2 or 3 percent annual enrollment increases seem to many as no growth at all. Heightened faculty and administrator expectations cannot now be met. Indeed, many persons are speaking and acting as though higher education enrollments nationally were on the decline. Of course, with total enrollment growth averages barely on the positive side, some institutions are experiencing net declines; but for many colleges, modest rises are continuing.

It is important to view the steady state in a much broader perspective, for preoccupation with temporary phenomena may only serve to distort reality. Only when an objective view is taken can appropriate reaction be made to resulting conditions.

This is not to say that there are not real and important effects of the present, relative decline. Indeed, the rapid growth of the 1960's resulted in a new, expansionist ethos for many institutions

> Not only had enrollment at both the undergraduate and graduate levels been mushrooming, but institutions had increased the quality and variety of their course offerings and had responded to the demand for greater equality of opportunity in higher education by increasing their expenditures on student aid and by developing special programs to facilitate participation in higher education of students with less than adequate preparation (Kerr 1971, p. vii).

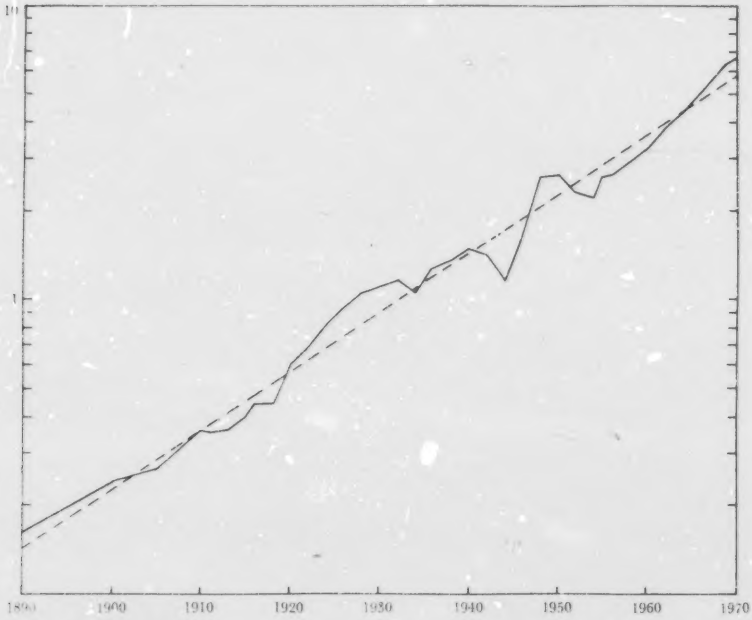
As a result of this expansion, the present slowed-growth condition is for many institutions one of actual organizational decline. Having geared up to receive large numbers of new students each year, many institutions must now cut back in the facilities and staff added in anticipation of continued growth. "Mothballing" hard-gained staff positions, facilities, and organizational procedures is never a pleasant experience. Substituting economy measures for plans of expansion comes as hard to higher education as it does to any social institution.

It is true historically, nevertheless, that both relative and actual declines have been only temporary conditions in higher education. If history offers any lesson, it appears that in all likelihood the steady

state will be a momentary phenomenon—although the moment surely will appear to involved parties to be a rather prolonged one. As figure 2 shows, the general enrollment curve over time has been constantly upward; *enrollments have progressed transversely.* Although the curve has oscillated in its year-to-year path, its general path as shown by the dotted line has been in an upward direction. This dotted line, or line of *transverse progression* as it shall be called in this paper, has risen steadily over time, even though the more specific curve has fluctuated periodically as enrollments have risen and then fallen and then risen again.

From figure 2 it might be hypothesized that higher education institutions as a whole are in a constant state of dynamism, seeking somehow to sustain long-term growth or transverse progression. Although the system both peaks and reaches low points periodically,

Figure 2. Higher Education Enrollments Since 1890 (Millions of Students—Logarithmic Scale)



Source: Data contained in U. S. Dept. of Commerce. Statistical *Abstract of the United States, 1972* (from 1930, p. 105), and Jon S. Greene, *Yearbook of Higher Education 1973/74* (1890-1956, p. 481).

and assumes the characteristics of a steady state, the overall pattern appears to be one of dynamism and steady growth. (Although the population curve is exponential [s-shaped], indicating an eventual leveling off, only about 3 to 5 percent of the population presently is engaged in higher education at any one time. Considerable room for growth remains.)

The question of interest now is whether higher education's history of transverse progression need necessarily continue. Is there good reason to believe that the present no- or limited-growth trend will be reversed and that higher education will continue its "growth" —however that may be defined? (Enrollments no more tell the full higher education growth story than the Dow-Jones Average tells the GNP growth story. Both have been rather good indicator variables, however.) Figure 2 shows that from history this would indeed be the prediction; however, by itself higher education's case history would seem to be an inadequate base for making long term enrollment projections.

More evidence is needed as to the plausibility of transverse progression as a theoretical concept before its value in making generalizations can be asserted. At the very least, other systems must be identified that illustrate the operation of the concept. Even this, of course, does not establish completely transverse progression, although it may demonstrate sufficiently the plausibility of the concept in higher education.

Let us turn to two other systems to observe whether they behave in a like manner, whether transverse progression seems to apply to systems similar to higher education. In this way we may gain confidence in transverse progression as a theoretical concept of value to our purposes here. Although only two systems are discussed—economic systems and life systems—many others could be included and indeed passing reference is made to some later in this chapter. Due to space limitation, only one, the economic system, is discussed in detail.

The Economic System

The American economic system was chosen for a somewhat detailed analysis for two particular reasons: American higher education has been shown to grow in relation to the American economy (O'Neill 1971, pp. 7-9); and it, like higher education, is an essential social system. If the economy is to continue to expand, there is good reason to believe that higher education too must expand. In

the post-industrial age any society that expands economically appears to be characterized by an increasingly complex technology and a work force that is correspondingly technically sophisticated. Thus, the relationship of the growth of the economy to the growth of higher education is hardly surprising. Both the development of sophisticated technology and the preparation of the necessary manpower to employ that technology are largely the domain of higher education institutions, which are thus essential organizations. The economic and higher education systems may periodically get out of perfect phase with each other, but this loss of synchronization can only be temporary because of their extreme interdependence. Through viewing our economic system, we may, therefore, come to a better understanding not only of higher education's growth but of its present and future declines.

That transverse progression applies to our economic system is witnessed in part by the lack of theory or specialty in any field or area corresponding to steady-state economics. In layman's language there appear to be few if any steady-state or no-growth economists. There is very little economic theory based upon the maintenance of a steady economic state over time, i.e., no economic growth, although there may be developing a systematic body of knowledge related to what is called "stagflation."

Further, there are no economic terms corresponding to the condition of no growth. Indeed, terms generally considered as synonymous to or descriptive of the no-growth condition have other meanings in economics. Concepts such as the stationary state in which nothing ever happens (Baumol 1959, p. 5), and equilibrium, a state that exists when a firm has no motives for modifying its activities in any way (Baumol 1959, p. 62), are useful in economics only for theoretical purposes. They have no relationship to a no-growth economy. Economists do perform "static analyses"; however, these analyses are not studies of the steady economic state but rather are temporal cross-sectional analyses of economic phenomena (Baumol 1959, p. 5).[1] In economics, statics is defined simply as the study of cross-sections of time (Baumol 1959, p. 6). Thus, discussions of statics in economics need not necessarily concern either economic growth or decline.

Equilibrium, as used in economics, may be interpreted in a similar fashion, although its more common usage is as indicated above. In

[1] See parts 3 and 4 of R. J. Hicks, *Value and Capital*, 1939.

neither case is the term used to connote a steady economic condition. Equilibrium is invoked as a necessary condition for the solution of mathematical equations, much as the reader probably has done in beginning algebra. Statical systems are defined as the series of equilibrium equations, the statical analysis being done on equations that represent economic conditions (variables) at cross-sections of time. A third use of the term is in the context of "dynamic equilibrium" in which supply and demand, again for theoretical purposes, are kept in constant equilibrium over time—the intersection of supply and demand constantly moving up and down in dynamic balance. This dynamic equilibrium is comparable to the Hicksonian notion of a moving equilibrium (Hicks 1950), the pivotal line of which appears analogous to the line of transverse progression described earlier.

It has been shown historically that the American economy has been in a constant state of growth since the beginnings of the nation; *over time the economy has always progressed transversely* (Abramovitz and David, May 1973, pp. 428-439). At any given moment the economy may be improving or declining, but even the declines are part of the dynamic process of growth.

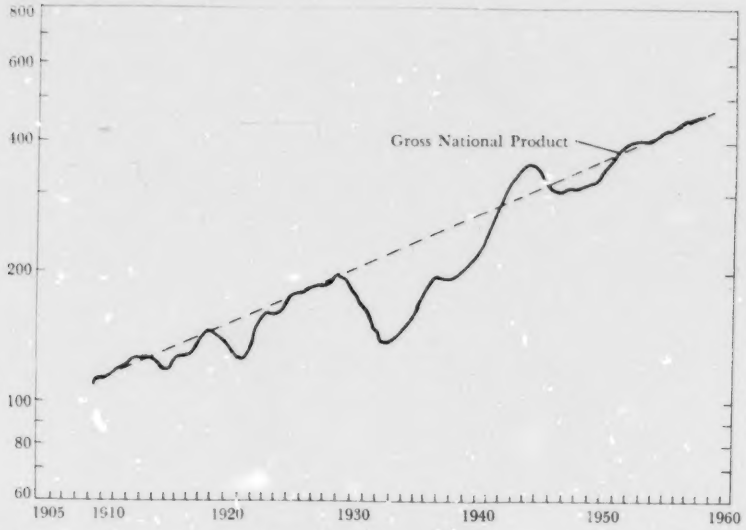
> But general economic growth as we have known it is not a balanced, steady-state affair in essence any more than it has been such in its myriad realistic details. Rather, central features of the historic process of growth since the earliest years of the Republic may best be viewed as part of a sequence of *technologically induced traverses*, disequilibrium transitions between successive growth paths—each new path being characterized by higher wealth-output proportions and *a fortiori* by per capita output levels higher than the one left behind (Abramovitz and David 1973, p. 429).

The economic growth curve then can be characterized (at any given time) as an oscillating phenomenon following a line of transverse progression. In the words of Poincare,

> . . . although the system may not exactly repeat itself starting from an arbitrary initial state, yet in general it will return to the vicinity of its initial state and nearly repeat its motion during a long interval of time (Birkhoff and Lewis 1935, p. 310).

In classical economics, constant progress (the line of transverse progression represented graphically as the curve of best fit plotted through the points representing the size of the economy over each point in time—see figure 3) is explained by the following (Baumol

Figure 3. American Economic Growth Since 1905 (Billion 1957 Dollars—Logarithmic Scale)



Source. U. S. Department of Commerce, November 1958.

1959, p. 15): In its progressive state, the economic system is characterized by considerable industrial resources or factors necessary for production. This tends to cause a rise in total production, and the higher the production the higher are wages. (These conditions characterize an expanding economy that increases at a rate faster than the historic line of transverse progression.) Higher wages lead to an increase in population; but because productive factors are limited in quantity, the increased production results in a decreased average return per capita. With the additional labor devoted to production, increased wages must be paid, which tends to consume larger portions of profits and thereby to reduce the inducement to invest. At this point the direction of the specific curve of economic growth (the actual curve showing the periodic ups and downs) is downward away from the more general line, the transverse progression line, and only a corrective factor will turn the economy (the specific line) back toward growth (the transverse line).

In the classical economic model the economy is seen as a series of such constant, naturally occurring corrections. The natural tendency

is toward the maintenance of a dynamic equilibrium about the line of transverse progression. The stockmarket represents a similar behavior as it corrects constantly to the ever-changing economic, political, and social climate. The daily market report in commenting upon these corrections often renders such pronouncements as, "the market is oversold," or "the market is undersold." Either statement is likely to be in partial explanation as to why investor interest is either waning or increasing. Technical corrections in the market are being witnessed. It is an interesting parallel to the major point of this chapter that investment analysts and brokers advise clients constantly that they should not panic as a result of day-to-day fluctuations in the market, but that they should take a *broader perspective* and enter the market for the long run, which will surely yield a handsome return on their investment.

There are many factors affecting the economy and corrections may be made long before the serious declines occur. If possible, firms will not wait for profits to disappear before taking anticipatory, corrective action. Workers will likewise anticipate changes in the job market and fluidity in the labor force may result. Further, artificial devices may act as brakes, preventing the system from oscillating too widely. Examples are government subsidies to business, regulations governing the raising of capital and the operation of the stockmarket, and collective bargaining on the part of workers. All reactions tend to modulate the on-going day-to-day curve which, therefore, deviates widely from the general curve of transverse progression only on infrequent occasions.

Even socialist economists accept the eventuality of transverse progression in a capitalistic state. Indeed, their writings are based upon this theoretical concept although it is not so labeled. Agreement is clear that growth in a capitalistic society will occur as predicted by the transverse progression theory. The only argument is with the final outcome. Socialist economists believe for various reasons that the capitalistic system eventually must decline.[2]

Does the Transverse Progression Concept Apply to Higher Education?

It has already been shown (1) that the history of higher education enrollment growth indicates the possibility of transverse progression, and (2) that higher education grows in relation to the economy. Can the case be made that higher education is analogous to our eco-

2 See Joseph Schumpeter, *The Theory of Economic Development* (1934), and Paul M. Sweezy, *The Theory of Capitalistic Development* (1949).

nomic system and thus that constant growth or transverse progression is descriptive of the higher education system? At least one other test would seem to be required before concluding that higher education parallels the economic system. What is it that such systems must have in common to fit the transverse progression model? *The functions performed by such a system must be essential to the total social system.*

Is higher education an "essential" system? Can we conceive of our society without higher education? Does it serve an essential function similar, for example, to that served by the apparently essential economic, transportation, and communications systems?

Industrial nations rely generally upon higher education systems for their trained manpower, for the technicians, experts, and managers who will make the system function. Post-industrial nations are absolutely dependent upon higher education institutions for preparation of these persons.

Higher education institutions serve many roles in addition to the preparation of trained manpower. Western universities have been the preservers and transmitters of Western culture. They have been the conservers of the freedom to question and to criticize society. Through the liberal arts and general education, Western civilization continues to be preserved for posterity.

We cannot conceive of our social system without some form of higher education. Its functions are too crucial. Thus, it appears almost certain that the higher education function will be maintained. We cannot imagine that higher education will be allowed to decline to a point of nonexistence, though present forms may expire. Indeed, a society evolving in technological and sociological complexity must be accompanied by a social institution able to keep pace with the demands for the skilled and enlightened manpower that is the very essence of evolutionary growth.

That it is the function that is essential, not the structure performing the function, can be witnessed in other systems. Radio is not a function; it is part of a larger system that serves a function—communications. It is interdependent upon the other elements of the communication "system." After the invention of television, from several perspectives radio declined. Yet the function, communications, was not only retained but was expanded, albeit in a somewhat different form.

In the evolution of life an organism in its primitive state may possess a single structure (e.g., cytoplasm bound by a membrane) for

carrying out all its life functions: digestion, circulation, responsiveness, etc. As the organism evolves in size, the single structure may become inadequate to conduct all body functions. Thus, digestive, circulatory, and neurological systems may evolve from a single system; and the older, less vital (in the Darwinian sense) structure may decline. In both the primitive and advanced states the functions, though not the structures, were crucial.

Capitalism may or may not (as Marx and Schumpeter would have us believe) survive in spite of a long history of transverse progression. It is difficult, however, to conceive of a society without some form of economic system responsible for the vital functions of producing, distributing, and consuming goods and services. The function is critical, though not the form.

A parallel case can be made for essentially any vital social funtion. A specific element in the transportation system, e.g., shipping, may "grow" until circumstances become more favorable for a new element (an innovation), such as trains. Shipping may then decline unless, among several possibilities, the total transportation need is great enough to accommodate growth in both elements, ships and trains, or of course, unless the innovation is a failure. Then it may become a significant part of the system's history. In any case the evolved element (trains) appears likely to grow at a faster rate, at least until the next innovation—the motor vehicle—arrives on the scene.[3] New forms emerge constantly, but the function performed expands each time.

Higher education serves a major societal function. It appears to parallel at least transportation and communications as a vital service. It does not appear that the higher education function will be replaced. Presently, higher education is composed of community colleges, 4- and 5-year colleges, universities, and multiversities. Higher education may change its form; we may not always need universities, or community colleges, or vocational-technical schools any more than we will always be dependent upon horses, ships, or trains. But we will always need higher education.

Summary and Conclusions

The history of higher education, the demonstration that transverse progression occurs in certain other systems, and the evidence that it

[3] It is interesting to note that many of the great railroad companies are not willing to acknowledge the eventuality of their replacement by the trucking industry. Some have simply bought up many of the larger trucking companies. Diversification is an attempt to innovate in order to keep pace with competition.

is the serving of an essential social function that is common to these systems argues for the plausibility of transverse progression in higher education.

Transverse progression provides us with the proper and broader perspective from which to view the present enrollment decline as perhaps no more than a temporary adjustment to an era of expansion that was too extreme to be maintained indefinitely. When viewed from this theoretical vantage point, the current decline in higher education is interpreted correctly to be a necessary adjustment. It was obvious from the beginning that the growth rate of the "golden years" of the 1950's and 1960's could not be sustained. At the extreme rate higher education was expanding, a point of diminishing returns eventually would be reached. It could not be long before the system ran out of potential, traditional students. Even if 100 percent of all college-age persons attended college, the rate of enrollment increase of these traditional college students would have to slow. The wild vacillation of the golden years was almost certain to be matched by an equally difficult and extreme period of readjustment. Higher education now appears to be in precisely this sort of corrective period.

All of this is not to scoff at the severity of present and pending higher education conditions; rather it is to broaden perspectives so we might better understand events and what the proper responses to those events should be. Perhaps the most important realization is that corrections will occur. Although present proposed funding plans (for basic opportunity grants and the resulting higher tuitions) might well exacerbate present declines and prolong the period of recovery, the demand for higher education is quite elastic. The natural course of events is for recovery to occur. The present decline is serious only to the extent that higher education leaders believe it to be the unavoidable beginning of the end, in which case it may become a self-fulfilling prophecy. In the words of Robert Schuller, "You'll see it when you believe it." The "fighting back," the efforts to prevent a severe decline in higher education, is as natural and as necessary as the twentieth century technique of raising the Federal Reserve discount rate to slow an overheated economy.

American Higher Education in a Period of Readjustment

An Analytical Framework

Viewed from the broader perspective, it must be concluded that higher education is now in a period of readjustment. Having experienced a downturn, the system is now seeking to resume its normal state of growth or progression. *It is suggested here that the activities that are presently of such great interest in higher education (e.g., tenure quotas, nontraditional studies, student enrollments) are those activities that have to do with higher education's efforts at resumption of growth.* It is further suggested that the framework for organizing the examination of these activities flows naturally from transverse progression. This framework emerges from a closer examination of how systems seek to recover from the periodic downturns that characterize their long-term movement.

Transverse Progression in the Economic System

The basic tenet of capitalism is that entrepreneurs search constantly for ways to improve productivity and thus enhance the competitive position of their firms in the marketplace. Firms will seek to introduce innovations (i.e., new procedures, inventions, discoveries that cause productivity improvements) that will give them an advantage over their competitors.

The consolidation of innovations, each resulting in some productivity gain, explains why the economy grows constantly. In business, innovations are not innovations forever. At first slowly, then more rapidly, others adopt the innovation and thus a productivity gain is consolidated within the entire system, much the same as in biology where a new genetic "innovation" is soon consolidated within related species. Many current collegiate innovations have in reality existed for a long time, and are only now being consolidated. As innovations occur, are adopted, and are consolidated, the total net effect is progress, or transverse progression. In essence, it would seem that the graphic profile of the quantitative sum of all such consolidations of innovations is represented closely by the line of transverse progression, which is the pivotal line around which technical corrections occur.

In higher education the "firms" are collegiate institutions, all

striving to be better, competitively, than other such institutions. Schumpeter (1934, p. 66) has identified five kinds of economic innovations from which parallels can be drawn to higher education. These five categories provide the framework for analyzing higher education in the no-growth era—as higher education seeks to revitalize. That which is of interest in higher education during this period should be found within this framework.

1. *The introduction of a new good or a new grade of good already in use*—In higher education one of the goods being provided is a credential that signifies a given amount of work has been accomplished. Over time we have seen a number of innovations in this regard. Thirty, forty, and fifty years ago an innovation was the baccalaureate degree for teachers. More recently it was the associate degree, and now it is the external degree.

2. *The introduction of a new method of production, e.g., a new type of labor-saving machinery*—Perhaps there is no good example of this type of innovation in higher education due largely to the labor intensive nature of the higher education process. The use of media in higher education is a poor example due to its under-utilization. On the other hand, the larger class size evidenced over the past several decades might serve as an adequate illustration.

3. *The opening of new markets*—This has been a rich area of innovation for higher education over the years. American higher education has progressed from elitism to democracy to egalitarianism. The present wave of egalitarianism has been evidenced by greatly added attention to the "new students," who are the disadvantaged, the women, and those past traditional college age, to name but a few.

4. *The employment of a new source of supply production factors*—Higher education has taken a back seat to few institutions in its search for new resources. At the outset, its resources came from individuals, from churches, and to a lesser extent from local governments. Higher education progressed to a greater reliance upon local funds and then upon state funds. Finally the resources of the federal government were tapped. Today, in a period of general decline, the system is seeking to utilize the resources of each of these forms of support more fully.

5. *The reorganization of an industry, several industries, or part of an industry, e.g., a monopolization of some industry*—Higher education institutions are forming consortia and in extreme cases are being combined or amalgamated. They have formed research centers and

institutes internally, added additional campuses, and in many cases revitalized vocational-technical offerings.

Even from this meager list, one can easily see how higher education can and is responding to the decline in enrollments. Many of these innovations may result in a nontraditional kind of growth: higher enrollments may not be the outcome. What the system seems to require is the dynamism that growth often brings.

This realization, coupled with a broader view of things, is required for a more accurate understanding of where we are in higher education and where we are going. Armed with the knowledge that the pending steady state in higher education will, in all likelihood, be only temporary, let us proceed to what may be the issues and problems solved by the coming innovations.

The Introduction of New Products

Higher education is in the process of developing new products in an effort to generate new and regenerate old student interest. Expanded enrollments are the goal. Considered here are issues related to the declining job market for many college graduates, the changing motivations of college students, and the maintenance of the institutional flexibility needed to develop new products at a time when tenure and collective bargaining contracts are emerging rapidly as potentially constraining forces.

What are the products of higher education? Traditionally, instruction, research, and public service have been defined neatly as outputs, with the former receiving major attention by productivity analysts. Some sort of student output, such as student credit hours, or in some cases the student-faculty ratio, are the typical units applied to the measurement of institutional productivity.

However, students are not uniformly viewed as the products of higher education, and they will not be so viewed here. Students have been variously considered as end-products (degree holders, educated people, etc.); consumers, as they select colleges, programs, and courses; and part of production itself, as they uniquely interact with their environment in the elusive educational process. This semantic entanglement will be avoided by defining (student-related) products as those higher education services "consumed" by students. This is considered an appropriate definition for our purposes since it is student choice, however well or poorly made, that most directly affects enrollments—which are the center of attention in this paper.

With students viewed as consumers, higher education's "products" become the institutional features that presumably affect enrollments:

courses, degree programs, nondegree programs, the character of the institution as perceived by the student (Clark 1968, p. 179), virtually the totality of what an institution offers its student-clients.

Perhaps the greatest stimulus to the creation of new higher education products is the current and projected reduced demand for college-trained manpower. Manpower surpluses in some professional fields (teaching), significant though reduced demand in others (law), and very slight demand for most liberal arts graduates is the current employment scene. In only a few isolated fields is the forecast clearly optimistic. At the Ph.D. level supply is considered almost universally to far outpace demand. At both the undergraduate and graduate levels, most prospects are dim for the foreseeable future. The Carnegie Commission (April 1973a) estimates that only 20 percent of all jobs require education beyond high school. "Yet today, more than one-third of the 18 to 21 age group is in college at any one moment of time, and one-half attend college at some point" (p. 2).

Partially in response to these conditions, regular, full-time student enrollments sometimes have actually declined in most recent years; and some enrollment shifts have occured internally within institutions. The future would appear to hold a continuation and expansion of these trends, but with compensating developments. At a minimum, part-time student enrollment increases should continue to compensate for regular student enrollment declines. Similar enrollment shifts will continue to occur internally, with direct job-related fields benefiting often at the expense of the liberal arts.

At the same time, there is another driving force for curricular change, a force perhaps at the opposite end of the student motivation continuum. In addition to those pragmatically motivated persons seeking traditional employment, there are others engaged in "the search for relevance." Reference here is made primarily to the many adults who seek a different kind of education, often on a part-time basis: an education oriented toward hobbies and recreation, toward family and personal development, and toward vocation-related subjects having a different slant (Commission on Non-Traditional Study 1973, p. 17). But there are also the traditional college-age persons (18 to 24) who desire educational experiences presently (but only momentarily, it would seem) removed from the higher education domain. Many students are seeking to spend their college years on careers they deem more useful than those typically identified with corporate capitalism (Carnegie Commission, April 1973a, p. 171). Apprenticeships in diamond-cutting; the following of the "latter day

Socrates," Paolo Soleri, in the Arizona desert; or the woodsman's life in Maine are illustrations of how students are searching and finding educational experiences off the well-beaten college career pathways (*Time*, 16 April 1973, p. 85). Changing consumer attitudes at both ends of the motivation continuum are developments to which higher education is reacting and will intensify its reactions in coming years.

These reactions will take many forms. In response to the traditional student having pragmatic employment motives, institutions will continue to reallocate resources to meet shifting student demands (e.g., the rapid and substantial recent expansion of law schools). Often this will involve only the expansion of existing offerings, but more frequently, new programs (e.g., environmental science) will be required, some of which will involve only moderate changes (e.g., interdisciplinary programs), but others of which will involve complete reorientations and retoolings.

Even the traditional liberal arts departments will be affected. The increasing job-orientation of students and the willingness of liberal arts departments to respond with new products has already been documented in a few institutions (*Chronicle*, 4 February 1974, p. 1). Since 1966, at Stanford University the number of English majors has dropped from 347 to 218 and the number of political science majors has declined from 342 to 224. At Southern Illinois University, where English, foreign languages, history and mathematics have experienced large enrollment losses, the School of Technical Careers notes significant enrollment increases. One response to enrollment declines by the Romance Language department has been to call for an "applied foreign language curriculum" designed to combine foreign-language study with programs in business, government and mass communications. At the University of Texas the English department has expanded its offerings to include a course entitled Editorial Procedures, an obvious attempt to appeal to students with strong vocational orientations.

The more severe departures from traditional programs fall under the heading of nontraditional studies: options for life-long learning, shifts in emphasis from the granting of degrees to the providing of service to learners, credit by examination, credit for life experience, and a variety of programs with special missions (Hartnett 1972). In some institutions, new nontraditional programs rival in magnitude the traditional offerings; in others, which have had the function, historically, nontraditional education is merely being revitalized.

The community colleges have enjoyed considerable success in drawing the "new" students; most of their continued enrollment growth is accounted for by part-time students, many of whom fit this description. Proprietary institutions are also increasing in appeal. In Pennsylvania recently, enrollments were up by 70 percent in one year. Early in 1973, the Bell and Howell proprietary school system was serving 11,000 students in eight locations (Doherty 1973, p. 182). The Empire State College of the State University of New York and the Syracuse Research Corporation's Five-County Project in New York State (Commission on Non-Traditional Study 1973, p. ix) are other examples of institutions with a special commitment to nontraditional education.

Nontraditional education also is being developed widely within long-standing institutions as a means for articulating new products with new markets. Of the 1,185 institutions surveyed by the Commission on Non-Traditional Study, 47 percent reported some efforts at nontraditional education, most of which were of recent origin (p. 29). Many of the new efforts are broad in scope. Aquinas College (Hruby 1973) has established Encore, a special program scheduled between 9 a.m. and 2 p.m. for degree-seeking women with school-age children (p. 31). Another 700 students are enrolled in Career Action, an evening program serving students who seek job credentials (p. 35). Another initiative involves an external degree program for former students who left school before graduating (p. 30).

Regardless of whether the higher enrollments resulting from such efforts at curricular reform are "Hawthornian" in origin or are fundamentally superior approaches, it is becoming clear that initiatives in the direction of providing universal postsecondary education may bring change, the scope of which, according to Veysey (1973), has not been seen in 70 years (p. 1).

Flexibility of New Products—In order to respond to a changing social, political, and economic environment, institutions of higher education, like business and industrial firms, must maintain the flexibility sufficient to allow the introduction of new products. Unlike the firm, however, higher education responds not only by meeting perceived needs, but also by defining them, that is, by offering insights unobstructed by the glare of the profit motive, and generally useful beyond the limitations of individual perspective. Higher education institutions attempt to market products that balance the fulfillment of needs as perceived by society with the responsible criticism of those perceptions.

The capabilities of faculty and their willingness to innovate are considered presently to be the major determinants of institutional flexibility and thus the ability to develop new products. Also important is the economic flexibility or the lack thereof created by the faculty mix by academic rank and length of service.

Presently the most common concern vis-à-vis flexibility is the portion of faculty who hold tenure. With declining enrollments, the great faculty mobility of the past will be markedly reduced and far fewer academic openings will occur. Changes in the character of the profession will be considerable. To paraphrase John D. Millett, "For thirty years the academic profession has been the career, now it will be one university" (1972, p. 12).

The Commission on Academic Tenure in Higher Education judges that most institutions probably would find it dangerous if their tenured faculty constituted more than one-half to two-thirds of the total full-time faculty during the decade ahead (Commission on Academic Tenure 1973, p. 50). Yet the present tenure figure is put at 64.7 percent nationally (Bayer 1973, p. 17); and even if only one-quarter of the eligible faculty were granted tenure, the ranks of the tenured would swell to 78 percent of all faculty by 1980 (Mann 1973, p. 88). It is estimated that the figure would reach 90 percent by 1990 under current practices (Carnegie Commission, April 1973b, p. 54).

An in-depth study recently completed in Pennsylvania revealed a comparable 63.9 percent tenure figure for all faculty in the state (Creasy 1974, p. 39), with certain institutional types demonstrating much higher percentages (p. 37). In the state-owned colleges and university alone, 83 percent were expected to hold tenure by the end of 1973 (p. 37).

Anxieties are high as administrators fear for their ability to bring about institutional change and improvement (Park 1972, p. 33), and slogans such as "tenured in" conjure visions of higher education with all the inflexibilities of the Civil Service (Carnegie Commission, April 1973b, p. 54). An inherent conflict is predicted between the university seeking flexibility and the faculty quest for job security (Management Division, October 1972).

Not only tenure, but concomitant increases in academic ranks and length of service contribute to fears of higher education ossification. Forecasts considering these factors indicate that concern is justified (Creasy 1974, Chapters IV and V). Furniss (1973) and the Institute for Educational Development (January 1973) have constructed faculty mix models that leave little doubt as to the tremendous influence

faculty compositions will have on the total institutional costs of operation.

A great number of strategies have been suggested for holding the line on tenure. Furniss (1973) advocates the use of visiting professors, giving retired professors temporary appointments, and forming a single institutional pool for all vacant positions (p. 5). The Newman Commission, in the *Report on Higher Education* (March 1973, p. 10), seems to believe that a good part of the problem will solve itself because of new markets for Ph.D.'s in the community colleges. The community colleges, on the other hand, are somewhat skeptical as to the appropriateness of the research-oriented Ph.D. degree to the purposes of their institutions (Cohen and Brawer 1972, p. 152). The four options typically considered by administrators are (1) to freeze hiring, (2) to freeze rank and salary, (3) to abolish tenure, and (4) to delay or make a secondary tenure decision (Mann 1973, p. 89). After examining present practices, Mann (1973) advocates full disclosure of the facts to the faculty, job restructuring, the expansion of student markets, the promotion of outside activities (including confiscating of money earned by faculty for outside work), early retirement, and flexibility in ranks, i.e., downward as well as upward "promotions."

However, in other places (Hopkins, August 1973) lowered retirement ages are seen as ineffective over the long run; and the extension of probationary periods is rejected because turnover would be reduced, faculty anxiety would rise, and too few positions for senior staff would result. Baumer calculates that a higher figure, 76.7 percent, is the most preferable tenure level (Baumer, Spring 1973).

Any efforts to set tenure quotas will be viewed by faculty as threats to job security. Thus, collective bargaining would be expected to increase, resulting in considerable loss of management flexibility. For example, union contracts sometimes result in the rigid setting of class size and teaching loads (Angell 1973, p. 97).

An Optimistic Look—That an older and more tenured-in faculty would result in somewhat greater institutional inflexibility would appear to make logical sense. However, it is possible that the relationship may have been overestimated if it is correct at all. One dissenting view holds that effectiveness in the professions and indeed in higher education appears to be much more dependent upon experience, knowledge, wisdom, and maturity than on youthful vigor (Woodring, 10 December 1973, p. 24). Another investigator has shown that age and academic rank correlate neither with the lack

of adaptiveness to social demands, with inadeqate performance in class, nor with failure to undertake reform. Rather, the relationship tends in the positive direction, indicating that performance, adaptation, and thoughts of reform increase with rank and age. Further, there was no evidence that tenure led either to stagnation or to curtailed output (Blackburn, July 1972, p. 31).

In the past faculty have shifted from one field to another and thus they may be expected to continue to do so in the future, particularly given the catalyst of a tight job market. Twenty percent of all holders of the doctorate change fields by their fifth year of employment, and another 20 percent do so by the 25-year benchmark (Harmon 1965).

Finally, the AAUP notes: "Just as the end of growth in the size of the faculty leads to a gradual increase in the ratio of those tenured, so the gradual aging of the present faculty will ultimately lead to a tendency for the ratio to decline" (American Association of University Professors, December 1973, p. 429).

New Methods of Production

Higher education institutions generally have been less inclined than have businesses to seek innovations through higher productivity. Indeed, as O'Neill has shown there have been in quantitative terms virtually no productivity increases in higher education since 1930 (O'Neill 1971, p. 1).

In spite of this disinclination on the part of collegiate institutions, there is considerable current evidence that, faced with impending financial crises, most institutions will search for means of raising productivity.

Simply stated, productivity refers to output per unit of input. In higher education the rough, working definition of productivity is the size of the institutional budget in relation to the number of students educated. A college spending fewer resources to educate more students is thought to be a more productive institution than its obvious counterpart—the one spending more to educate fewer.

Although complex procedures have been developed for precise measurement of productivity, it is sufficient to our purposes here to note that instructional productivity can be increased by reducing the amount spent while holding the number of students educated constant or nearly so, or by keeping spending more or less constant while increasing the output. Though this approach is a bit simplistic, it is probably a fairly accurate statement of how the public

and most college administrators and boards view the possible resolutions of the problem. Further, the approach avoids unresolvable productivity disputes that would be counterproductive to the purposes outlined here.

As noted in the literature, most efforts to improve productivity would appear to fit rather neatly into either of two general categories: efforts to raise instructional productivity and efforts to save money through better management, that is, through efficiencies in administrative activities. It is probably not surprising that the former has received the major attention. With academic instruction consuming approximately 50 percent of the budget in all kinds of institutions of all sizes (O'Neill 1971, p. 1), the large savings often required for institutional solvency can come only from efficiencies in this largest budget area (Chambers 1963; Russell 1965, pp. 273-303).

Even so, actual efforts to improve instructional productivity are not in equal proportion to the potential savings for one very good reason: resistant faculty attitudes. College faculties are well known for their opposition to changes in instructional techniques. The anticipated great surge in the use of mass instructional media (television and movies), which were pioneered at the University of Minnesota and The Pennsylvania State University in the late 1940's and early 1950's, never materialized. Although these media have been adopted nominally on many college campuses, the lecture method and the most flexible of all audiovisual aids, chalk and chalkboard, continue to dominate higher education instruction nationwide. Although institutions are being exhorted to experiment with labor-saving instructional devices and techniques (Doi 1965, pp. 112-114; Gillis 1971, pp. 364-377; McLeod 1971, pp. 12-13), long experience tells us that most such urgings largely will fail to yield the hoped for gains. A sobering research finding is that "the traditional lecture and textbook generally got high use compared to newer forms like programmed learning, team teaching, and television teaching" (Kelly and Wilbur 1970, p. 86).

Nevertheless, old ideas with new twists are receiving a fresh breath of life as a result of the financial downturn in higher education. Beardsley Ruml's *Memo to a College Trustee* (1959) has been removed from the management consultant's dusty shelves and reintroduced as an idea whose time might finally have come. Ruml's original plan to increase the student-faculty ratio to 20 to 1 through the combination of large lecture courses of 90 to 300 students, small

lecture-discussion sections of 45-90 students, and semi-tutorials of 10 to 16 students, has been only moderately modified by current manipulators. Added to his combination of techniques have been independent study, private tutorials, mechanical audio-tutorials, and computer-assisted instruction. In addition to the Ruml Plan, there is now the Bakan Plan (Bakan 1969, pp. 30-34, 42-43), the Kieffer Plan (Bowen and Douglass 1971, Chapter II and Appendices A and B), and perhaps best known, the Bowen-Douglass Plan (Bowen and Douglass, 1971). Whereas Bakan would emphasize tutorial instruction and Kieffer would focus on programmed independent study, Bowen and Douglass have designed an eclectic plan composed of elements of both of these plus elements of the Ruml plan. Bowen and Douglass present three models with varying student-faculty ratios and varying levels of course proliferation, showing how the instructional budget could be cut by as much as 55 percent (Bowen and Douglass 1971, Chapter 5).

The suggested means for improving instructional productivity are many. Perhaps no list is so complete as that offered by the Management Division of the Academy for Educational Development, which offers "Nineteen Ways Colleges and Universities are Increasing the Student-Faculty Ratio" (Behrens, October 1972, pp. 3-5). Included are eight techniques for establishing larger classes, four means of curbing course proliferation, and seven miscellaneous methods.

On the administrative or management side, attention is being given to reducing costs through efficient management procedures. Indeed, a "rapidly growing management movement" has been identified in higher education (*Chronicle*, 16 April 1973, pp. 1, 4-5). Often thwarted in their attempts to improve instructional productivity by recalcitrant faculty, yet faced with the necessity of cutting costs, institutional managers have emphasized other ways to raise instructional efficiency. They have been inclined to place a freeze on the hiring of new faculty, to stiffen tenure policies, to hire adjunct faculty, and in general to reduce the size of teaching staffs.

Outside the direct instructional area, systems analysis, program budgeting, management information systems, and management by objectives, prophesy the increasing bureaucratization of higher education. The increasing need for recordkeeping alone will add considerably to this already rapidly developing trend (*Chronicle*, 15 January 1973, p. 6).

A specific technique now enjoying extraordinary popularity is cooperative education, by which up to one-half of an institution's

undergraduate enrollees are occupied in off-campus employment at any one time. A common scheduling pattern in cooperative education programs consists of a freshman year of full-time on-campus study, followed by alternating periods of off-campus work experience and on-campus academic study. Almost 300 colleges and universities currently offer some form of cooperative education in at least one of their academic programs (Knowles 1974, p. 2). Many others are examining the opportunity for extraordinary savings in instructional costs (which may approach 80 percent by one estimate) (Knowles 1974, p. 1), as witnessed by the nearly 300 additional institutions that responded recently to a U. S. Office of Education call for proposals for support in establishing cooperative education programs (Knowles 1974, p. 2).

A précis of a case study may serve as a summary statement to this section. In *A Survival Kit for Invisible Colleges,* President Norbert J. Hruby of Aquinas College (1973) describes how his institution was brought from financial disaster to relative affluence in a period of three short years. After having lost $450,000 between 1968 and 1971, and having projected a 1971-72 deficit of $125,000, the college instead ran a surplus of $130,000 through a series of community education projects and stringent internal management procedures (Hruby 1973, p. 54). President Hruby reports that both the faculty and administration became more productive and more fully employed as a result of these new programs. Classes were fuller, facilities were used in nonpeak hours, expensive special equipment and facilities were more fully used, and more adjunct faculty were employed. The institution's student to faculty ratio rose from 12.5 to 1 to 17 to 1 in 4 years (Hruby 1973, p. 48).

Opening New Markets

Increasingly the attention of higher education is being drawn to the exploration of new student markets. Although the attraction of new students ultimately may also require new job markets for graduates, of direct and immediate concern to higher education institutions is simply the recruitment of greater numbers. To institutions, new students represent a life-sustaining flow of resources.

Although the mood throughout many sectors of higher education reflects the inevitability of a continuing slowdown (Glenny 1973), there are optimists who suggest that many potential student markets are largely unexplored, and that these markets offer the opportunity for continued higher education expansion. For every present non-

student who would have attended college a decade ago, it is estimated that there is another nonstudent who, in terms of personal potential, ought to be enrolled (Knoell 1973, p. 120). S. V. Martorana (1973) has observed that "there are now, and for some decades to come apparently will continue to be, more clients for post-high school educational services than the organized enterprise in higher education will reach" (p. 5).

More concrete evidence supporting these perceptions is offered by the Commission on Non-Traditional Study (1973). Using a representative sample (the residents of 3,910 households) of the approximately 104 million people between the ages of 18 and 60, the Commission learned that while 30.9 percent were engaged actively in some educational pursuit, loosely defined as such activities as independent study, on-the-job training, and correspondence courses, another 45.9 percent or 47.7 million people nationally reported an interest in further education (p. 16). Allowing a generous ratio of four to five of these students for each full-time equivalent (FTE) student, full exploitation of the market potentials would result in an increase of 10 million FTE students. It is quite clear that even in these lean times higher education still has room to grow.

The list of lucrative new student markets is long and is still growing. First there are the traditional adult and transfer students (Carnegie Commission, August 1973, p. 36), who represent markets that seldom have been cultivated in the past. There are also the academically underprepared of all ages, many of whom are disadvantaged (Losak 1973; Cross 1971; Roueche and Kirk 1973; and Roueche 1968). There are the married women; the older, working individuals; and the incarcerated. There are the markets created by other societal forces: the "new" students resulting from the upgrading of vocational and technical programs from 1- or 2-year status to baccalaureate equivalency; those representing lowered attrition rates, which have resulted from the dollar incentives to colleges to keep students enrolled and from declining work availability; and those resulting from expansion of the "right to college" doctrine (Management Division 1971, p. 1). There are the nontraditional and seldom-mentioned markets characterized by Vista, the Youth Conservation Corps, and trade-union apprenticeship programs (Carnegie Commission, October 1973, p. 95), and there is perhaps the largest potential market of all: those in need of job retraining and updating (Huitt 1973, p. 18). Finally, there is the pre-college age market of high school juniors and seniors who meet academic stan-

dards of postsecondary level programs (Carnegie Commission, August 1973, p. 6). All these and additional markets already are being explored in many institutions, particularly in community colleges.[4]

Foreign student markets also represent a potential pool for further enrollment growth in American higher education. West Germany, for example, currently has a surplus of 50,000 students, 500 of whom will be studying in the United States, tuition paid by the West German government (*Chronicle*, 4 February 1974, p. 2). With the uncertain state of the world economy, the efficient use of higher education resources becomes of high priority to all nations. The unused capacity of American higher education may attract even greater numbers of students from a variety of foreign countries.

A corollary of the increased searching for new students is the predicted greatly increased competition for students both among and within institutions (Folger, 15 January 1973, p. 6). There is almost certain to be greater competition between the public and private sectors (Shell, June 1973, p. 5), and among internal units of individual colleges and universities. To most public institutions, enrollments represent tuition income and per capita state appropriations. To private colleges they represent tuition income that composes about three-fourths of all institutional resources. Clearly, the contest for potential students between the two sectors will grow in intensity.

Within each sector the competition will become equally fierce, with higher status and lower costs sometimes determining who will survive. To the present at least, institutions with high prestige, often the universities, have generally managed modest growth (NASULGC, 26 March 1973); and low-cost institutions, generally the community colleges, have continued with relatively large enrollment gains (6.2 percent for public 2-year institutions, with a 12.9 percent rise in part-time enrollments—Parker, April 1973, p. 458). Meanwhile, those institutions that have no clear advantage in either regard, often the "invisible" private colleges, the state colleges, and former state colleges recently transformed by legislative fiat into universities, bear the brunt of any enrollment losses. Further, there is evidence that in the future, low-status community colleges also may begin to decline or at least greatly slow in their enrollment growth as the Federal Basic Education Opportunity Grant Program and various state grant programs approach full funding. Under

[4] See *Understanding Diverse Students*, Dorothy M. Knoell, issue editor.

these programs low-income students, who presently attend community colleges in disproportionate numbers, would be provided sufficient resources to opt for more prestigious institutions. Major evidence already exists that many such students would do just that (Leslie and Fife 1974).

Even within institutions there is likely to be intense competition for students as funds are distributed in relation to the number of student credit-hours produced. Either additional resources for growth or selective pruning of faculty rosters accrue to administrative units that experience significantly altered enrollments. Perhaps the most intense internal struggles will occur between liberal arts and occupationally oriented components, with the latter gaining at the expense of the former in a steady or declining job market for college graduates (Glenny 1973, p. 146).

It may also be presumed that pressures to maintain enrollments, coupled with the growing wave of egalitarianism, will result in lowered admissions standards in many if not most institutions. This tendency already is so widespread that examples are probably not required. Since 1970, the ratio of collegiate applications to acceptances has declined in almost all institutions (NASULGC, 6 May 1973).

Along with efforts to explore new student markets, some educators are considering how old markets can be maintained. Thus attention is being given to the declining job markets for some graduates. One such case is that of the Ph.D., for whom federal educational support has diminished (down 40 percent since 1968--*Report on Higher Education* 1973, p. 9) and for whom employment demand has slackened markedly. Essentially this is because the American academic market, the traditional mecca for most doctorates, is filled to near capacity.

Some efforts to find new placements for Ph.D.'s already have begun. The University of Tennessee has established a program for post-doctoral intern fellows. Though remuneration is small, fellows may practice their art for a year or perhaps two, while awaiting a regular academic vacancy. It has been suggested that industry and governmental agencies ought to create similar opportunities wherein scholars might use their training and gain experience, hopefully with a better chance for later employment (Wildman and Williams, 7 May 1973, p. 16).

Opportunities outside the academic world offer the greatest potential for absorbing Ph.D. surpluses. It is likely that we will find

the less tenacious degree recipients drifting into totally new occupational areas (sales, business management, etc.); a highly competent few moving into the equally few academic openings; and perhaps those who refuse to depart academia altogether marketing their talents as tutors and itinerant educators in the burgeoning world of nontraditional and external studies.

Still others may follow Bowen's unique suggestion to seek fruitful occupational experiences within their areas of specialization in developing countries (1973, p. 9). This "reverse brain drain" would compensate in part for the historic American practice of enticing away foreign scholars and professionals while providing an appropriate employment outlet for many of our best educated citizens.

Higher education, by moving to new markets, appears not only to be slowly righting itself, but also to be moving away from what Hodgkinson has called the "single status system" that has resulted from the all-pervasive university influence (1971, p. xv). Many of the resulting changes will most surely be for the better, while others, such as lowered standards, just as surely will not be heralded by all.

Employing New Sources of Supply of Production Factors

Factors of production or productive factors consist of all the inputs required to produce outputs (goods and services). The employment of new sources of raw materials, energy, labor, etc., all constitute examples of this kind of innovation in industry. Additional money to run the institutions, new sources of students, new sources of faculty, and new facilities are comparable examples in higher education. Considering the general state of affairs in higher education of the various kinds of productive factors (e.g., there is no faculty shortage), only two would seem to be promising areas of innovation during the present downturn: new sources of students and new sources of income. The enrollment of new students is discussed more appropriately under the heading of new markets; therefore, only the seeking of the transformation resource (money) will be considered here.

Higher education has taken a back seat to few social institutions in its search for new fiscal resources. In its early days in America these resources came from individuals, churches, and to a lesser extent from local governments. Without forfeiting any of these funding sources, higher education progressed eventually to a greater reliance upon local and then upon state funds. Finally the resources of the federal government were tapped. Today, in a period of general, relative decline the system is seeking to utilize more fully the re-

sources of each of these forms of support. Individuals are being asked to pay higher tuitions; corporate bodies are being asked to raise their gift contributions; the states and localities are being pressed to make larger and larger appropriations; and finally, perhaps the largest effort of all is being made to capture more money from the federal government.

It is always easier and more agreeable internally for an institution to ask those who support it to provide more money than it is to invoke efficiencies or to attempt internal changes that would produce more income. Given the choice, few institutional leaders will choose retrenchment over growth. Although demanding greater and greater amounts from governments and from tuition-payers may lead eventually to conflict with external groups, harmony with those in close daily contact can be maintained almost indefinitely, and institutions can grow and prosper. On the other hand, new programs, new courses, new academic standards, and institutional efficiencies can produce internal conflicts.

Only on rare occasions have institutions looked within for additional funds. This did occur, for example, after the Civil War when faculties withstood salary reductions to meet rapidly rising costs rather than allow higher tuitions (Rudolph 1962, p. 199), and during the Great Depression when lower salaries matched enrollment declines. But such events are rare. Present trends indicate that the rate of salary increases will merely become slower, sometimes to the point that increases will not match inflationary rises (*Chronicle*, 4 February 1974b).

From 1960 to 1970, the annual percentage change in total current fund expenditures by institutions of higher education ranged from approximately 12 to 17 percent (Carnegie Commission 1972, chart 1, p. 3), and appropriations generally kept pace (Chambers 1958-1973). Since 1968, however, current fund expenditure increases have been slowed in keeping with a comparable slowing in appropriations. In an effort to maintain steady growth and to offset these conditions, institutions have been seeking new fiscal resources. For example, tuition has risen over the past 5 years at a rate 20 percent faster than the rate of increase in per capita disposable income during the period from 1960 to 1972 (Carnegie Commission 1973a, p. 11). Although considerable internal dollar savings are possible and indeed probable (estimated at 20 percent by the Carnegie Commission 1972, p. 1), further resources almost certainly will be required in the decade of the 1970's. The reasons are several.

First, higher education is labor intensive. Whereas productivity gains average 2.5 percent in the larger economy, historically, productivity gains have not occurred in higher education (O'Neill 1971, p. 1). Since the days of Plato, the process of education has consisted largely of a teacher and a relatively fixed number of learners gathered together in a semi-formal group for the purposes of intellectual exchange. Labor-saving devices simply have not been a major feature of the teaching-learning process. Thus, while mechanized industries have freed additional resources through productivity gains, such has not been the case in higher education.

Second, inflation continues to erode more and more of the purchasing power of the higher education dollar. So-called "hold-the-line" budgets are, in fact, serious financial cutbacks as the tasks to be accomplished are approached with fewer dollars than formerly were available.

A third additional higher education "cost" is related to the gross national product or more simply to the standards of living. Over the past decade per capita disposable income has increased about 2.5 percent per year in real terms for the United States as a whole. To keep pace with other workers, the professors, custodians, secretaries, and bureaucrats of higher education institutions must achieve similar gains beyond inflation. Since between 60 and 80 percent of institutional budgets are involved in personnel costs, an additional heavy demand upon higher education resources is involved (Carnegie Commission 1972, p. 6).

From where will these additional resources come? It is assum widely in the higher education literature that the pool of resources available to higher education from governments will not increase significantly in the coming years (Committee on Economic Development 1973, p. 15). Indeed, in a 1973 report on the management and financing of colleges, the Committee for Economic Development (CED) brought forth recommendations that assumed governmental support would be raised only to match increased enrollments and increases in the cost of living (Committee for Economic Development 1973, p. 62). Under the CED plan the large difference between costs and income would be made up by higher tuitions (Committee for Economic Development 1973, p. 82).

Higher tuitions are a feature either implied or explicitly stated in almost all of the reports of the major groups studying the financing of higher education (CED, Carnegie Commission, the College Entrance Examination Board, and the Newman-HEW Task Force). De-

pending upon the proposal, tuitions would rise by varying amounts, but would approximately double in public institutions in the next 5 or 10 years. The additional money raised (estimated at $1.7 billion for the base year 1969-70—Committee for Economic Development 1973, p. 82) would, in part, allow governments to reduce the amount of institutional aid to provide additional support to needy students. The net gain by institutions would be problematic because grants to students do not result in higher institutional incomes unless tuitions are also raised.

With students the only party to the funding conflict without adequate representation, it is not surprising that additional funds would be sought through higher tuitions. Appropriation battles between institutional spokesmen and state legislatures have grown more severe each year. The rate of appropriation growth finally has slowed, and in some cases it has ceased. As a result, institutions have been forced to tap more fully the only other resource pool available to them: student tuitions. Although effective student lobbying is now coming into existence (e.g., in California), it is doubtful that students will become a full partner in the funding debate for some time (Shell 1973, p. 3).

A good part of the success these proposals for higher public college tuitions have enjoyed has resulted from a serious split in the higher education community. Spokesmen of the private sector generally have been pleased with legislative action to raise public college tuitions. Agreeing covertly with the zero-sum assumption of higher education resources for the coming years, many private college leaders have welcomed any plans that might reduce the gap between public and private college tuitions, while providing student grants redeemable at any institution.

Unless the high tuition policy fails to have its intended effects, it is doubtful that public and private institutions will consort significantly to increase the general level of higher education funding. In a few cases the threat of legislative action apparently has influenced the striking of agreements between the two sectors in regard to some matters (e.g., in New York and Massachusetts—Shell, June 1973, p. 7), but only in Pennsylvania has a funding agreement been reached between the public and private institutions (The Pennsylvania Association of Colleges and Universities 1974). This agreement would allow no tuition increases in the public sector and additional funds for student grants and student-following grants to the private institu-

tions, with the net effect being substantially increased public funds for higher education in the state.

With the exception of an occasional relatively original proposal, most overt effort to increase institutional resources has been unique to individual institutions. Several have begun giant fund raising drives (Stanford, Princeton, New York University), and occasionally a single institution has launched a broader effort. For example, Aquinas College in Grand Rapids, Michigan, increased its unrestricted budget eightfold in 4 years as a result of a community development activity, while tripling the number of community donors. Gifts were increased from $77,000 to $337,000 in 2 years, and considerable additional resources were generated through the opening of new markets (Hruby 1973, p. 53).

Finally, for the manager who may have overlooked something, there is the Academy for Educational Development's "163 Ways to Save Money, Reduce Costs or Avoid Problems in Personnel Administration" (Millett 1972, pp. 31-43).

In summation, it is perhaps worth reflecting upon Howard Bowen's observation that an institution's budget is determined as much by its power to raise money as by its financial need (Bowen 1972, p. 23). Employing new sources of productive factors has been a very potent area of innovation in higher education.

Reorganizing and Restructuring the Enterprise

Under this subheading are institutional actions of consolidation, the abandonment of old objectives and related structures and the creation of new ones, and the various internal institutional reshufflings that may not necessarily be manifested in physically changed organizational structures. Program changes and the setting of new priorities may result instead.

Higher education currently is reorganizing on several fronts. Within individual institutions, academic programs and indeed the very structure of the traditional academic department are receiving careful scrutiny. Between institutions, time-honored barriers to cooperation are melting in the white heat of economic necessity. Among the institutions within separate states, the emergence of statewide agencies responsible for the coorrdination and often the control of colleges and universities has changed the organizational complexion of higher education such that many fear that institutional independence will be the unjust payment for greater cost effectiveness. And even at the federal level, pressure is being brought to bear to

secure greater efficiency through mandated coordination of planning in higher education institutions, e.g., through the 1202 Commissions authorized by the Education Amendments of 1972.

Within the Walls—Organizational patterns that no longer assist a college in fulfilling its unique purposes threaten the very existence of the institution. The department structure sometimes has impeded the free flow of ideas among scholars of diverse backgrounds and interests. Such impediments always exist in some colleges and universities just as they do in other organizations, but during times of financial duress such conditions cannot be treated benignly.

Though it is largely incorrect and may even be dysfunctional to suggest that the blame for the problems of higher education rests entirely with the departmental structure, it is not so outlandish to relate student dissatisfaction with collegiate curricula and thus declining enrollments to the inflexibility and the segmentation of knowledge represented by academic departments. Thus, many new interdisciplinary programs and accompanying structures are emerging (e.g., bioengineering, human development, sociology of sport) within institutions, and occasionally an entire new enterprise is started (e.g., the University of Wisconsin-Green Bay).

Structural reorganization to bring about institutional cohesiveness of purpose is no more striking than the efforts of many colleges and universities to reallocate resources in concert with a reexamination of their academic offerings. Program review, traditionally nothing more than the continual reassessment of academic offerings in the effort to maintain institutional vitality, is now more regularly countenanced as an instrument by which funding priorities can be assigned. Because it is rather unlikely in the 1970's that new programs will be added without something else being subtracted, the orderly evaluation of on-going programs has become a crucial institutional function. As Paul Reinert put it, financially troubled colleges may be rescued if they "find the dead wood" in services, courses, and programs, etc., and then selectively put hand to the pruning shears (Reinert 1972a, p. 1).

Thus, major effects of the enrollment slowdown are being felt in the internal reorganizing and restructuring of the academic enterprise. Other related effects are growing bureaucratization and growing faculty and staff unionization. Because of the morass of paperwork and procedures that typify it, bureaucratization poses a threat to the flexibility of an institution at the very time when freedom of action may be most urgent. Faculty unionism almost certainly

will affect authority structures as well as the structure of the administration, although it may also serve to codify faculty-administration relationships in such a way that paths of action for both become better understood.

Interinstitutional Cooperation—In the past, colleges and universities rarely felt the need to enter into cooperative arrangements with neighboring institutions. Academic chauvinism was most conspicuous when two neighboring colleges offered the same esoteric program, with neither being able to command an enrollment sufficient to justify the program. Whereas the lavish 1960's were an encouragement to educational extravagances of this kind, today not only are institutions seeking cooperative arrangements for the pooling of their separate talents and resources, but their survival may sometimes hinge upon the forging of such agreements. In the present and coming decade of readjustment such innovations are expected to be utilized more fully, both in the present, largely voluntary ways and as dictated by state governing boards.

Higher Education and the States—The growing state presence in matters of higher education is directly related to the pressing need for more efficient and effective use of state resources, which has been brought on by the present relative higher education decline. More and more, state governments hold that if higher education is unable to achieve efficient and effective operation on its own, the state will of necessity intervene. Such interventions already exist, the most extreme form of which may be the setting of student-faculty ratios by state legislatures (accomplished in Arizona, Kansas, Minnesota, Missouri, Montana, and New Mexico; attempted but defeated in New York and Ohio; and currently being studied with interest in several states, e.g., California—Behrens 1972, p. 2).

Another form of intervention is represented by the state higher education agency of which a variety of forms and ranges of responsibility have been established (see Berdahl 1971). Whether coordinating boards or more powerful governing boards, these agencies have been viewed with increasing suspicion by many educators.

However, temporarily at least, such boards often have had neither the means nor the will to fulfill the worst fears of the institutions. It has become apparent in the past few years that the respective authority of the agencies and the institutions to make critical decisions has not been clearly delineated, and that the actual amount of intervention by state boards may vary markedly. Perhaps the most difficult and urgent task for the state-institutional partnership

to accomplish in the coming years is the carving of the middle ground that will result in the institutional autonomy necessary to effective internal operations, and the agency power required to yield the largest possible return on the public investment.

Although state coordination and control are often viewed with alarm, the potential gains in the period of no-growth also are considerable. First, an agency with coordinating responsibility can assist in the fair distribution of resources and the conserving of scarce higher education resources through the elimination of waste. Second, pressures to economize may stimulate an institution to better know itself, to gain a firm knowledge of its identity, and by so doing, to reveal whether the conditions in which it operates are constraints or opportunities (Aldrich 1966, p. 23). Third, accountability to governments, though often rightfully perceived as a liability, may serve as an opportunity for institutions to demonstrate the value of their social contributions and thus their justifiable and proper claim upon public resources. Fourth, state coordination has the potential for enabling a diverse higher education system, in contrast to the sameness that is so often alleged by the critics of the system. By urging the elimination of duplication, many institutions may be nudged back into those educational corners in which they perform best. And fifth, the requirement by some boards that institutions develop long-range plans will benefit institutions in which brush-fire, day-to-day administration has been practiced.

Although it would be foolhardy to conclude from these five points that the emerging state coordination of the no-growth era will be all to the good, it is also clear that state presence, in and of itself, is a thoroughly insufficient condition for depression. Coordination of institutional efforts and the requirements for planning may indeed enhance the strength and diversity of higher education, while the public demand for wise expenditure of tax revenues is satisfied. The preservation of higher education's needed freedom to pull and fray the social fabric may depend ultimately upon how persuasively institutional spokesmen make the case for public commitment to the higher education function.

New Relationships with the Federal Government—Although historically the federal government has maintained a low profile in the affairs of higher education, increased tapping of the federal treasury already has resulted and will continue to result in a much more watchful federal eye. Further, new institutional-governmental arrangements will result. Formerly, the central government dispensed

its funds through special-purpose categorical grants, the monitoring of which for the most part represented the boundaries of federal purview. But with the passage of civil rights legislation and the issuance of administrative orders, federal scrutiny was extended to faculty, staff, and student personnel policies. With the formulation of collective bargaining agreements, events having important roots in the phenomenon of no-growth, most private colleges are overseen in many important ways by the National Labor Relations Board. With passage of the Education Amendments of 1972, the creation of state planning bodies, or 1202 Commissions, were authorized and now apparently they will be funded. Further, the Basic Educational Opportunity Grants and National Guaranteed Student Loan Programs mandated student needs assessments, which by implication severely restrict the college's freedom to administer its own scholarship and loan funds. And finally, the Amendments called for a thorough study of and recommendations concerning those issues that bear on the finance of postsecondary education. The resulting report calls for considerable standardization of institutional reporting and data collection nationally.

In sum, higher education is reacting to the current decline in part by reorganization—reorganization within institutions, between and among institutions, and between institutions and state and federal governments. Whether internally or externally initiated, higher education as an essential system will seek to preserve its critical function; but whether it will be successful is an issue that remains in question, so powerful are the implications of this form of innovation.

Summary and Conclusions

Summary

This paper has shown that an era of no- or limited-growth is descending upon higher education. Whether expenditures for higher education are considered or, as is more typically the case, enrollments are used as the primary indicator, the period of rapid growth is largely behind us and periods of net decline may even be experienced. The enrollment growth rates of 12.0 percent in 1965 were 2.0 percent in 1972-73. The percentage of 18 to 19 year old males enrolled in colleges and universities in the fall of 1972 was 37.6 percent, down from 44 percent only 3 years earlier; and the future is not any brighter because of the declining birth rate. The potential college-age population of the 1980's and the 1990's is insufficiently large to allow a resumption of the growth in traditional enrollments experienced in the 1960's. And these are students already born, not numbers projected on some statistician's population curve.

Although the enrollment prognosis from Chapter 2 was not optimistic, Chapter 3 introduced a broader perspective. Here it was shown that at least for the present there continues to be growth. It was shown that it is largely in the context of the great expansions of the 1960's that present trends appear depressing. Further, it was shown that both relative and actual declines have been only temporary conditions in higher education. Historically, enrollments have mostly risen and only occasionally declined; the general enrollment curve over time has been in an upward direction. Like the American economy, higher education generally has progressed transversely, that is, although the curve has fluctuated in its year-to-year path, its general path has always been in an upward direction.

Borrowing from economics, it was shown that *transverse progression* or the constant general growth of an essential social system is inevitable in a rising nation. The periodic ups and downs in the economy were seen to be periodic adjustments in the economic system. It was seen that these adjustments were both necessary and natural in a growing nation with a growing economy, much the same as corrections occur from time to time in the capital (stock) market.

In Chapter 4 it was seen that the processes, called innovations, by which capitalistic firms react to periodic declines are analogous to certain developments in higher education, and thus that Schumpeter's categories of innovation provide a suitable framework for examining higher education in a period of relative or absolute decline. Higher education can produce new "goods" or new grades of "goods"; it can alter its methods of "production" and thus improve productivity; it can open new "markets" by appealing to new students; it can locate new sources of "productive factors," particularly financial resources; and it can reorganize its enterprises. All of the activities of particular interest in higher education in this period of relative decline can be analyzed and discussed under this framework. There are other major issues currently facing higher education, but those related in some way to the no-growth condition are contained in at least one of these five categories.

Although it is far too early to form any conclusions, the first shred of evidence may now be appearing to indicate that innovations are already having their effect. The rate of higher education enrollment growth has already "bottomed out" and once again is rising after two stable years. Enrollments in 1973 rose at the rate of 3.9 percent (National Center for Educational Statistics, Vol. XXII, No. 39), rather than the 2.0 percent estimated earlier; and even first-time registrations were up 4.4 percent in public institutions after essentially no growth in 1972-73. Most startling of all, graduate enrollments rose after 2 years of very little growth, and this in the face of a severe Ph.D. surplus (*Chronicle*, 24 December 1973, p. 1). Perhaps already the innovations are having their effects and transverse progression is being resumed.

Conclusions: Three Caveats

First, in discussing our theory of transverse progression we have been careful to point out that *growth will continue only so long as the society itself continues to grow and prosper.* Surely an opposite effect obtains in a declining society. But whether the society has reached or will soon reach a summit, we will leave to more self-assured prophets. In any case, nothing offered in this paper should be construed to mean that the growth rate of the 1960's will be resumed or even be approximated. The growth forecasted is of a much milder variety.

The more pessimistic observers of higher education have been saying for some time that there is no room left in the market for

expansion. The evidence pointed to is the collegiate enrollment of approximately 50 percent of all high school graduates in the "college age group" (18 to 24 year olds). And yet it is noted that only from 3 to 5 percent of the total population is enrolled in higher education at any one time, and that only now are we beginning to take seriously the business of educating persons beyond the typical college age. And for those who would point out that much of our population is below college age and thus not a potential market at all, we would only remind them that we have already begun to enroll high school juniors and seniors in college courses. For those who would point out that only about 20 percent of the population can be employed in positions requiring the presumed competencies of the baccalaureate degree, we would remind them that only a generation or two ago a high school education was considered to be overpreparation for most jobs and that now 2 years of college is becoming a reasonable expectation for almost everyone. As the wealth of the nation continues to grow and families share in the rewards, parents will want more higher education for their children in the recognition that education gives an economic advantage to those who possess it and the *potential* to compete in an ever-expanding and ever more complex society.

Second, we have also tried to convey the notion that *it is the higher education function, not specific kinds of institutions, that exhibits transverse progression.* Neither colleges nor universities need necessarily survive, at least in their present form, although we are quite certain they will; but the functions performed therein plus evolving functions will continue to be conducted by some kind of postsecondary enterprise. In the words of Blackburn (1973), "Academe has survived war, famine, plague, Christianity, prosperity, and, so far, the SDS (Students for a Democratic Society) and the FBI (Federal Bureau of Investigation) with remarkably little change in structure or method for over 2,000 years in the West" (p. 1145).

Third, we have sought in this paper *not to intimate a narrow definition of the term "growth."* It is less certain that enrollments will continue to rise over time than it is that growth of some kind will occur, although we believe that enrollment growth will continue. Future growth may be either quantitative or qualitative or both. In the years to come there may have to be development without growth, qualitative improvements rather than numerical expansion. "Change, once again, as from 1870 to 1910, now seems likely to proceed at an accelerated rate," says the Carnegie Commis-

sion (1973b, p. 44). The form this "growth" or change may take is at present obscure, but the nature of man is such that he will seek to expand his horizons wherever there is a break in the clouds and a patch of sunlight. This is the natural course of things, and we cannot hold back growth any more than we can curb man's quest for knowledge, truth, and a better life.

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